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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,903	10/31/2003	Jacob Augustine	200311727-1	3619

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FORT COLLINS, CO 80527-2400

EXAMINER

TORRES, JOSE

ART UNIT	PAPER NUMBER
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2112

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/28/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/698,903

Applicant(s)

AUGUSTINE ET AL.

Examiner

Jose M. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 June 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to because:

- FIG. 4: elements 404a-p are not properly shown. Examiner recommends renumber elements 404a-p counter clock-wise.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:
- Page 14 First Paragraph lines 7-8: "region-of-interest 401" should be
-- region-of-interest 102 --
 - Page 17 Second Paragraph line 7: "flowcharts 500" should be
-- flowchart 500 --
 - Page 19 Last Paragraph line 2: "peripheral device 109" should be
-- peripheral device 610 --

Appropriate correction is required.

Claim Objections

3. Claim 12 is objected to because of the following informalities:
- Line 2: "image of a user" should be -- image of an user --

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 4, 5 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "said skipping macroblocks" in line 1. There is insufficient antecedent basis for this limitation in the claim. However, it appears to be dependant upon claim 3, and has been treated as such. Affirmation of this is required by the appropriate amendment.

Claim 5 recites the limitation "said deleting discrete cosine transforms" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. However, it appears to be dependant upon claim 3, and has been treated as such.

Affirmation of this is required by the appropriate amendment.

Claim 20 recites the limitation "said robotic surrogate location" in line 3. There is insufficient antecedent basis for this limitation in the claim. However, it appears to be dependant upon claim 19, and has been treated as such. Affirmation of this is required by the appropriate amendment.

Claim 20 also recites the limitation "said compressed video stream frame from said robotic surrogate" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim. Examiner recommends replacing the claim limitation with -- said full-frame size video stream frames from said robotic surrogate --

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1, 2, 6, 9-11, 14, 21, 22 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (U.S. 5,748,789).

Re claim 1: Lee et al. disclose a method of performing region-of-interest editing of a video stream in the compressed domain ("object-based video encoder"), said method comprising: receiving a video stream frame comprising an unwanted portion and a region-of-interest portion (Col. 42 lines 28-33); compressing said video stream frame to obtain a compressed video stream frame ("compressed video data", Col. 43 lines 10-15); and editing said compressed video stream frame to modify said unwanted portion and obtain a compressed video stream frame comprising said region-of-interest portion ("objects", Col. 43 lines 28-34).

Re claim 2: Lee et al. disclose said compressed video stream frame conforms to a defined video stream frame compression standard including the MPEG-2 standard (Col. 7 line 66 through Col. 8 line 8).

Re claim 6: Lee et al. disclose transmitting (Col. 10 line 66 through Col. 11 line 7) said compressed video stream frame from a first location to a second location for decoding (Col. 11 lines 21-26) and displaying of said video stream at said second location (Col. 29 lines 4-12).

Re claim 9: Lee et al. disclose receiving and decoding said compressed video stream frame at the second location (Col. 11 lines 21-26).

Re claim 10: Lee et al. disclose displaying said edited video stream frame at the second location (Col. 29 lines 4-12).

Re claim 11: Lee et al. disclose said modifying of said unwanted portions is performed in a manner that avoids modifying macroblocks proximate to said region-of-interest, thereby establishing a guard ring of pixels around said region-of-interest ("not transparent blocks", Col. 46 lines 48-61).

Re claim 14: Lee et al. disclose a region-of-interest editing system for performing region-of-interest editing of a video stream in the compressed domain, said system comprising: a computer system for receiving a video stream frame comprising an unwanted portion and a region-of-interest portion (FIG. 1, "computer system 20", Col. 6. lines 12-18); a compressor for compressing said

video stream frame to obtain a compressed video stream frame, said compressor in communication with said computer system (FIG. 33, "coding units **1504-1508**" Col. 42 lines 28-33 and Col. 43 10-15); and a region-of-interest editor for editing said compressed video stream frame to modify said unwanted portion and obtain a compressed video stream frame comprising said region-of-interest portion, said region-of-interest editor in communication with said compressor (FIG. 33, "encoder **1500**", Col. 43 line 48 through Col. 44 line 4).

Re claim 21: Lee et al. disclose a computer-readable medium including computer implementable instructions stored therein, said instructions for causing a computer system to perform a method of region-of-interest editing a video stream in the compressed domain (Col. 54 lines 3-13), said method comprising: receiving a video stream frame comprising an unwanted portion and a region-of-interest portion (Col. 42 lines 28-33); compressing said video stream frame to obtain a compressed video stream ("compressed video data", Col. 43 lines 10-15); and editing said compressed video stream frame to modify said unwanted portion and obtain a compressed video stream comprising said region-of-interest portion ("objects", Col. 43 lines 28-34).

Re claim 22: Lee et al. disclose said compressed video stream frame comprises a video stream conforming to a defined video stream compression standard including the MPEG-2 standard (Col. 7 line 66 through Col. 8 line 8).

Re claim 27: Lee et al. disclose said instructions included instructions for modifying said unwanted portions in a manner that avoids modifying macroblocks proximate to said region- of- interest, thereby establishing a guard ring of pixels around said region- of-interest ("not transparent blocks", Col. 46 lines 48-61).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3, 5, 13, 16 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Kato et al. (U.S. 7,111,045). The teachings of Lee et al. have been discussed above.

Lee et al. teaches said editing said compressed video stream frame is selected from the group consisting of skipping macroblocks ("Skipping transparent blocks", Col 43 line 55 through Col. 44 line 4) as recited in claim 3.

However, Lee et al. fails to disclose deleting discrete cosine transform coefficients in said unwanted portion, said deleting discrete cosine transform coefficients comprises: deleting discrete cosine transform coefficients to the left of said region-of-interest portion for predictive coded (P) frames and bi-directionally predictive-coded (B) frames; and deleting discrete cosine transform coefficients outside said

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region-of-interest portion for intracoded (I) frames and said video stream frame is edited in real time.

Kato et al. teaches deleting discrete cosine transform coefficients in said unwanted portion, deleting discrete cosine transform coefficients to the left of said region-of-interest portion for predictive coded (P) frames and bi-directionally predictive-coded (B) frames; and deleting discrete cosine transform coefficients outside said region-of-interest portion for intracoded (I) frames (FIG. 10A-C, Col. 10 lines 50-67) as recited in claims 5, 16 and 24 and said video stream frame is edited in real time (Col. 1 lines 60-65) as recited in claim 13.

Therefore, in view of Kato et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lee et al.'s method by incorporating the step of deleting a part of the DCT coefficients on every frame outside the region of interest according to the image size on the communication channel and editing the video frame in real-time in addition to skipping the transparent macroblocks outside the region-of-interest in order cut-out the user position from the original office-space view of the video camera and make it possible to display it using a conference system in distant locations.

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Kato et al. as applied to claim 3 above, and further in view of Boice et al. (U.S. 2001/0001614). The teachings of Lee et al. modified by Kato et al. have been discussed above.

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However, Lee et al. modified by Kato et al. fails to disclose said skipping macroblocks comprises skipping macroblocks located above, below and to the right of said region-of-interest portion for predictive coded (P) frames and bi- directionally predictive-coded (B) frames.

Boice et al. teaches said skipping macroblocks comprises skipping macroblocks located above, below and to the right of said region-of-interest portion for predictive coded (P) frames and bi- directionally predictive-coded (B) frames (Paragraphs [0084] and [0085] and claims 32-33).

Therefore, in view of Boice et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Lee et al. as modified by Kato et al. by incorporating the method step of skipping macroblocks corresponding to P and B frames if their motion estimation is zero and macroblock difference is low, in addition to the removing transparent macroblocks step, in order to minimize or eliminate perceptible picture pulsation in a sequence of MPEG encoded still frames or partial still frames.

11. Claims 7, 8, 17, 18, 25 and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Maki et al. (U.S. 6,072,903). The teachings of Lee et al. have been discussed above.

However, Lee et al. fails to disclose said region-of-interest portion is defined by changing position coordinates in said video stream and using a head-tracking system to locate in real time said changing positional coordinates of said region-of-interest portion.

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Maki et al. teaches disclose said region-of-interest portion is defined by changing position coordinates in said video stream ("modifying a relation", Col. 24 lines 29-39 and lines 52-58) as recited in claims 7, 17 and 25, and using a head-tracking system to locate in real time said changing positional coordinates of said region-of-interest portion ("head tracking", Col. 23 lines 56-63) as recited in claims 8, 18 and 26.

Therefore in view of Maki et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lee et al.'s object-based video coding method by incorporating the method step of modifying a relation containing, as a coefficient matrix, the matrix generated from the positional coordinates of the group of the correlated feature points and using a head tracking system, the head being the object, in real time in order to reduce the amount of information necessary for the transmission of images extracted in a teleconference system.

12. Claims 12, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Anderson et al. (U.S. 6,958,746). The teachings of Lee et al. have been discussed above.

Lee et al. further teaches a decoder for decoding and displaying said compressed video stream frame at said user immersion location (Col. 11 lines 21-26) as recited in claim 20.

However, Lee et al. fails to disclose said region-of-interest portion is selected from an image of a user at said first location and an image of robotic surrogate environment at said second location, said user and said robotic surrogate in

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communication with each other via a computer network, a user immersion location for accommodating a user; a remotely operable robotic surrogate disposed remotely from and in communication with said user at said user immersion location, said user capable of remotely operating said robotic surrogate from said user immersion location to display said video; a computer system for recording said video stream at said user immersion location and for transmitting said compressed video stream frame from said user immersion location to said robotic surrogate; and a computer system for decoding and displaying said compressed video stream frame on said robotic surrogate and a computer system for recording full-frame size video stream frames at said robotic surrogate location; a transmitter for transmitting said compressed video stream frame from said robotic surrogate to said user immersion location.

Anderson et al. teaches said region-of-interest portion is selected from an image of a user at said first location (FIG. 1, "telepresence control **20**", Col. 5 lines 15-23) and an image of robotic surrogate (FIG. 2, "robot **72**") environment at said second location, said user and said robotic surrogate in communication with each other via a computer network (FIG. 1, "communication link **40**" Col. 5 lines 15-64) as recited in claim 12, a user immersion location for accommodating a user (FIG. 1, "telepresence control **20**", Col. 5 lines 15-23); a remotely operable robotic surrogate (FIG. 2, "robot **72**") disposed remotely from and in communication with said user at said immersion location, said user capable of remotely operating said robotic surrogate from said user immersion location to display said video (Col. 5 lines 36-64); a computer for recording said video stream at said user immersion location and for transmitting said compressed video stream frame

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from said user immersion location to said robotic surrogate ("input devices", Col. 5 lines 36-64); and a computer system for decoding and displaying said compressed video stream frame on said robotic surrogate ("telepresence device", Col. 5 lines 53-64) as recited in claim 19, and a computer system for recording a full-frame size video stream frames at said robotic surrogate location ("stereo camera set **62** and zoom camera **64**", Col. 5 lines 36-52); and a transmitter for transmitting said compressed video stream frame from said robotic surrogate to said user immersion location ("communications link **40**", Col. 5 lines 15-23) as recited in claim 20.

Therefore, in view of Anderson et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lee et al.'s system by including a user immersion location for accommodating a user ("telepresence control"), a remotely operable robotic surrogate disposed remotely from and in communication with said user at said user immersion location, said user capable of remotely operating said robotic surrogate from said user immersion location to display said video ("robot"), a computer system for recording said video stream at said user immersion location and for transmitting said compressed video stream frame from said user immersion location to said robotic surrogate ("input device and communication link"), a computer system for decoding and displaying said compressed video stream frame on said robotic surrogate and a computer system for recording full-frame size video stream frames at said robotic surrogate location ("stereo camera set and zoom camera"), and a transmitter for transmitting said compressed video stream frame from said robotic surrogate to said user immersion location ("communication link") in order to

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implement the system in hazardous environments for humans as in nuclear reactors, underwater activities or even medical procedures.

13. Claims 15 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Boice et al.. The teachings of Lee et al. have been discussed above.

However, Lee et al. fails to disclose said region-of-interest editor is operable to edit said compressed video stream frame by skipping macroblocks located above, below and to the right of said region-of-interest portion for predictive coded (P) frames and bi- directionally predictive-coded (B) frames in said video stream.

Boice et al. teaches said region-of-interest editor is operable to edit said compressed video stream frame by (instructions for) skipping macroblocks located above, below and to the right of said region-of-interest portion for predictive coded (P) frames and bi- directionally predictive-coded (B) frames in said video stream (Abstract, Paragraphs [0084] and [0085] and claims 32-33) as recited in claims 15 and 23.

Therefore, in view of Boice et al., it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Lee et al.'s system by incorporating the skipping of macroblocks corresponding to P and B frames if their motion estimation is zero and macroblock difference is low, in addition to the removing transparent macroblocks step, in order to minimize or eliminate perceptible picture pulsation in a sequence of MPEG encoded still frames or partial still frames.

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Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Strongin et al. disclose the Generation of a Secondary Video Bitstream from a Compressed Video Stream to Enhance Playback Performance, Yagasaki et al. disclose a Method and Apparatus for Encoding and Decoding an Image Signal, Boucher et al. disclose a System and Method for Preparing Multimedia Data Using Digital Video Data Compression and Talluri et al. disclose A Robust, Scalable, Object-Based Video Compression Technique for Very Low Bit-Rate Coding.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jose M. Torres whose telephone number is 571-270-1356. The examiner can normally be reached on Monday thru Friday: 8:00am - 4:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jong-Suk (James) Lee can be reached on 571-272-7044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic

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Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMT
12/15/2006

A handwritten signature in black ink, appearing to read 'J. Lee', is positioned above the printed name and title.

JONG SUK LEE
SUPERVISORY PATENT EXAMINER